

ABSTRACT

LIDAR APPLICATION FOR MAPPING AND NAVIGATION ON CLOSED ENVIRONMENT

Mapping and navigation on robots is now widely applied in areas such as industry, home appliances, military, exploration and automated vehicles. Mapping and navigation of robots is essential for use in closed environments that are hard to reach by humans. With the mapping and navigation on the robot can allow the robot to recognize the surrounding environment.

Data from LIDAR sensors can be converted to maps of the surrounding environment and can be used as an estimate of the position of robots in a *CLOSED* environment. The distance data from the LIDAR sensor and the LIDAR sensor position status data are converted into cartesian axes and processed into local maps. Localization using LIDAR sensors are used as a reference for updating global maps.

The result of this Final Project is the device has been able to do the mapping of its environment and determine its position. The sensor's distance measurement has an error of less than 0.109%. The resulting map can be made a navigation path from one point to another desired point.

Keyword : *Mapping and navigation, LIDAR, localization, local map, global map.*